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Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: FLOOR COVERING WITH WOVEN FACE

(57) Abstract

Flooring that utilizes sophisticated, self-stabilizing, woven face fabric using relatively heavy "carpet weight" nylon, polyester, PTT or other yarns on modern Jacquard computer controlled looms to produce flat-weave fabrics that are bonded to engineered backing structures. Urethane modified bitumen may be used as a backing layer, and an optional latex precoat may be used on the fabric layer, together with an optional antimicrobial in the precoat.

We claim:

1. Floor covering, comprising:

a woven fabric top layer,

a backing layer positioned below the fabric top layer, and

a backing fabric below the backing layer.

2. The floor covering of claim 1, further comprising a reinforcement web under the backing layer.

3. The floor covering of claim 1, in which the woven fabric top layer is woven on a jacquard loom.

4. The floor covering of claim 3, in which the woven fabric comprises polyester yarn.

5. The floor covering of claim 4, in which the polyester is selected from the group of polyethylene terephthalate, polybutylene terephthalate, poly(trimethylene terephthalate), poly(1,4-dimethylenecyclohexane terephthalate), poly(ethylene 2,6-naphthalene-dicarboxylate), and polylactic acid.

6. The floor covering of claim 3, in which the woven fabric top layer comprises yarn of 600 to 3600 denier (total yarn denier) having 8 to 80 denier per filament.

7. The floor covering of claim 6, in which yarn in the woven fabric top layer comprises yarns of 600 and 2400 total yarn denier having 20 denier per filament.

8. The floor covering of claim 4, in which the polyester yarn comprises PTT yarn.

9. The floor covering of claim 1, further comprising a precoat layer between the woven fabric top layer and the backing layer.

10. The floor covering of claim 9, in which the precoat comprises highly frothed ethylene vinyl acetate or acrylic latex.

11. The floor covering of claim 10, wherein the precoat is formed by applying a highly frothed ethylene vinyl acetate or acrylic latex to the underside of the woven fabric top layer.

12. The floor covering of claim 11, in which the precoat further comprises an antimicrobial.

13. The floor covering of claim 12, in which the antimicrobial comprises a phosphorus amine antimicrobial.

14. The floor covering of claim 9, in which the precoat comprises a base latex, water, a foaming agent, thickener and flame retardant.

15. The floor covering of claim 9, in which the precoat further comprises an antimicrobial.

16. The floor covering of claim 1, further comprising a fabric stabilizing layer adjacent to the fabric top layer.

17. The floor covering of claim 16, in which the fabric stabilizing layer comprises a web of non-woven fiberglass fleece.

18. The floor covering of claim 1, in which the backing fabric comprises woven polypropylene carpet backing.

19. The floor covering of claim 1, further comprising a resilient layer positioned between the fabric top layer and the backing layer.

20. The floor covering of claim 19, in which the backing layer is urethane-modified bitumen.

21. The floor covering of claim 20, in which the backing layer weighs between approximately 10 and 60 ounces per square yard.

22. The floor covering of claim 2, further comprising a resilient layer between the backing layer and the backing fabric.

23. The floor covering of claim 22, in which the resilient layer comprises polyurethane foam.

24. The floor covering of claim 2, in which the reinforcement web comprises non-woven fiberglass fleece.

25. The floor covering of claim 24, in which the fiberglass fleece weighs approximately 1.3 ounces per square yard.

26. Floor covering comprising:

(a) a woven fabric top layer comprising polyester yarn,

(b) a layer of urethane modified bitumen below the fabric top layer,

(c) a layer of polyurethane foam below the layer of urethane-modified bitumen,

(d) a fiberglass fleece web positioned generally between the urethane modified bitumen and the polyurethane foam, and

(e) a web of woven polypropylene carpet backing below the polyurethane foam.

27. The floor covering of claim 26, further comprising a latex precoat containing an antimicrobial on the underside of the woven fabric top layer.

28. A method for producing floor covering, comprising the steps of:

(a) weaving a face fabric on a loom,

(b) forming a layer of resilient material,

(c) bonding the resilient layer to a web of backing fabric,

(d) forming a backing layer,

(e) positioning a reinforcement web between the backing layer and the resilient layer,

(f) bonding the backing layer and resilient layer together with the reinforcement web between the backing and resilient layers, and

(g) bonding the face fabric to the backing layer.

29. The method for producing floor covering of claim 28, in which the face fabric is woven on a jacquard loom.

30. The method for producing floor covering of claim 28, in which the resilient material comprises polyurethane foam.

31. The method for producing floor covering of claim 28, in which the backing fabric comprises woven polypropylene.

32. The method for producing floor covering of claim 28, in which the backing layer comprises urethane modified bitumen.

33. The method for producing floor covering of claim 28, in which the reinforcement web comprises nonwoven fiberglass fleece.

34. The method for producing floor covering of claim 28, further comprising the step of applying a precoat to the face fabric before bonding the face fabric to the backing layer.

35. The method for producing floor covering of claim 34, further comprising the step of incorporating an antimicrobial in the precoat.

36. A method for providing a continuous floor covering on a floor comprising the steps of:

(a) positioning on the floor sections of floor covering completely covering the floor area to be covered, the floor covering comprising a woven fabric top layer, a bottom layer of woven polypropylene carpet backing, and at least one layer between the woven fabric top layer and the woven polypropylene carpet backing,

(b) cutting the floor covering so that edges of adjacent sections of floor covering are abutting,

(c) applying adhesive between the underside of the carpet sections and the floor,

(d) applying fabric edge sealer to adjacent fabric top layer edges,

(e) applying carpet seam sealer to at least adjacent carpet backing edges, and

(g) with the floor covering sections positioned on the floor with edges positioned in abutting relationship, permitting the adhesive, seam sealer and fabric edge sealer to cure.

37. The method for providing a continuous floor covering of 36, in which the fabric edge sealer is a polyester urethane.

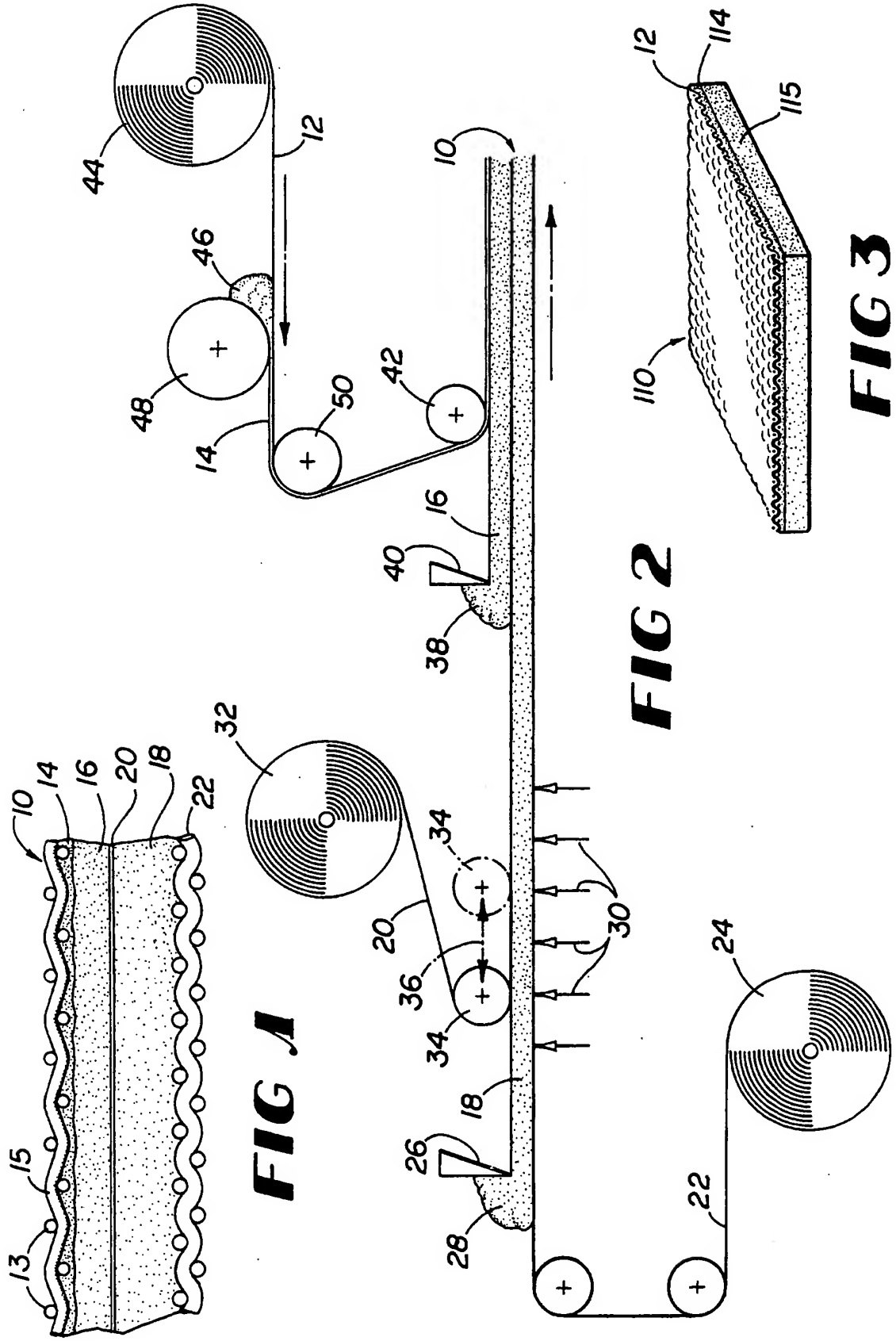

FIG 1

FIG 2

FIG 3

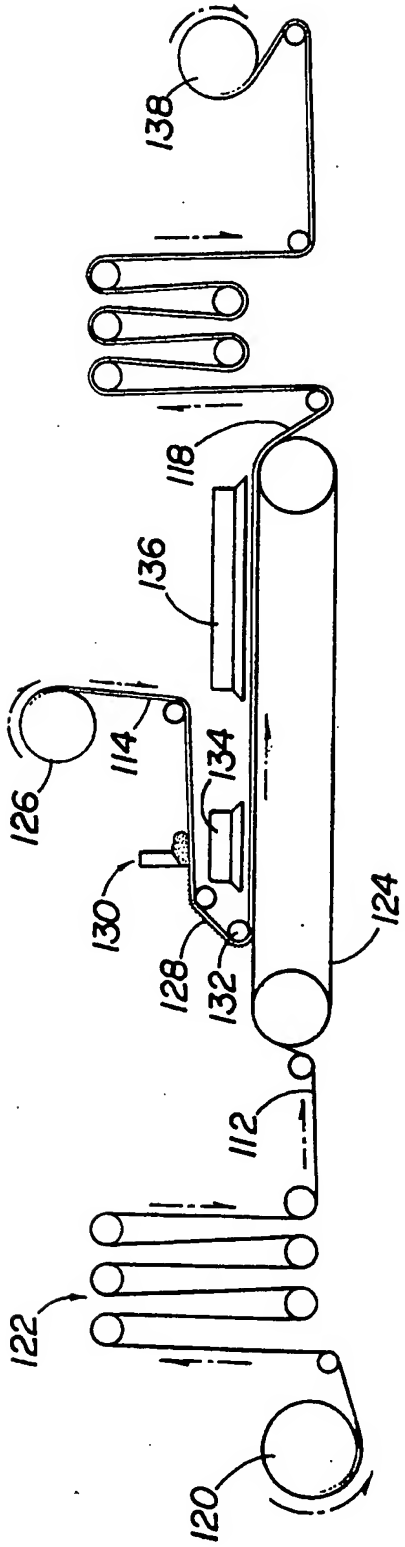
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FIG 4

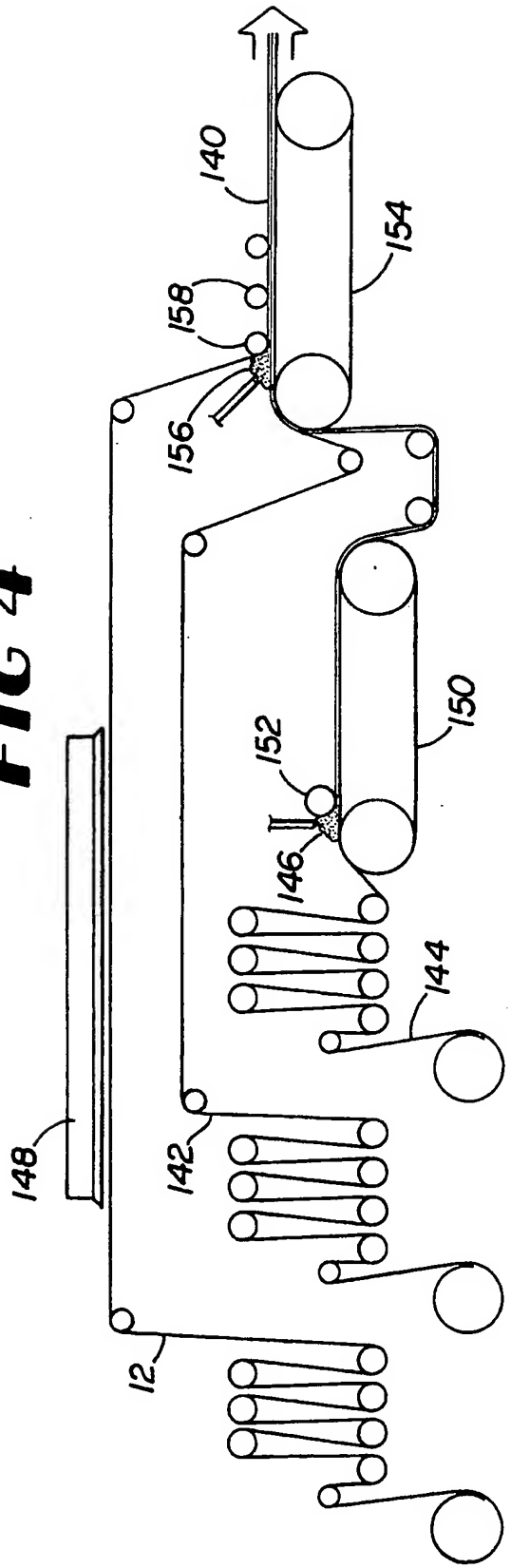
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FIG 5

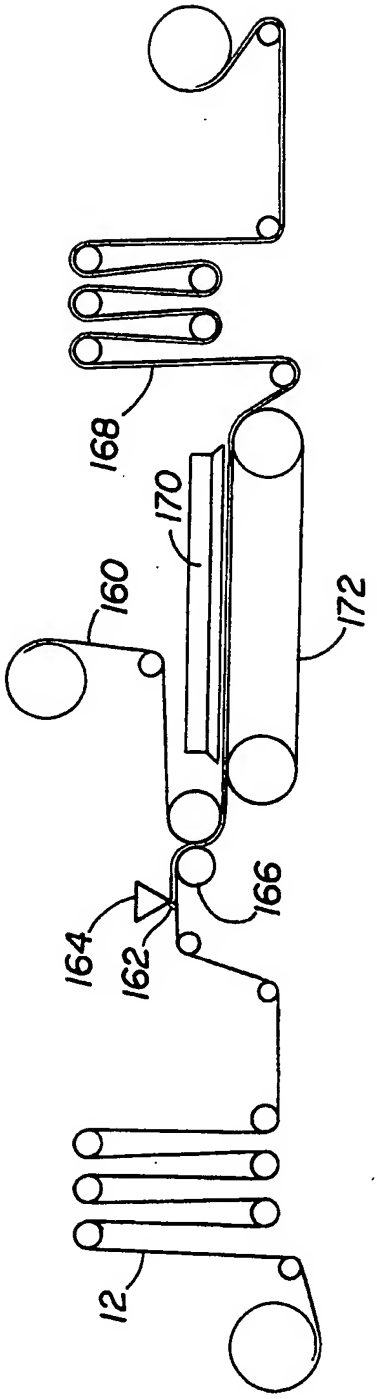

FIG 6

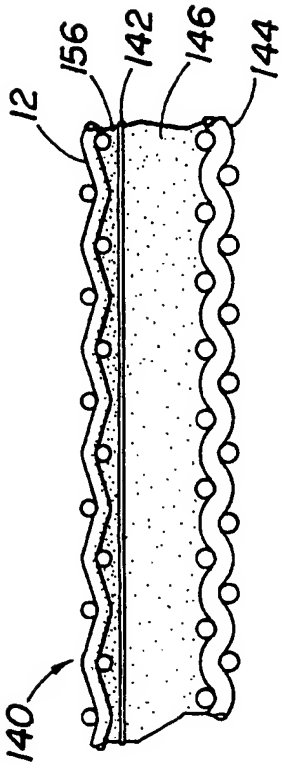

FIG 7

INTERNATIONAL SEARCH REPORT

nternational Application No
PCT/US 98/21487

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 D06N7/00 A47G27/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 D06N A47G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 16 35 484 A (DELDEN & CO.) 13 May 1971 see page 2, paragraph 1; claim; figures	1,2,9, 15-17, 22-25
Y A	WO 93 08325 A (INTERFACE INC) 29 April 1993 see the whole document	1,2,9, 15-17, 22-25 28
Y	WO 95 23691 A (MILLIKEN RES CORP) 8 September 1995 see the whole document	2,22-25
Y	WO 90 14107 A (INTERFACE INC) 29 November 1990 see claims 1,4,9,10	15

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
16 March 1999	23/03/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Pamies Olle, S

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nternational Application No
PCT/US 98/21487

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	DE 92 18 998 U (CARL HERDING GMBH & CO KG) 28 November 1996 see claims	1
A	DE 296 00 724 U (LONGLIFE TEPPICHBODEN BERNDT C) 13 February 1997 see page 2, last line - page 3, line 5; claims 1,5; figures	1
A	DE 94 16 152 U (KOCH GUNNAR) 15 December 1994 see page 6, paragraph 2 - paragraph 3; claims; figure see page 8	1
A	US 2 752 277 A (W.R. KEEN) 26 June 1956	1
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